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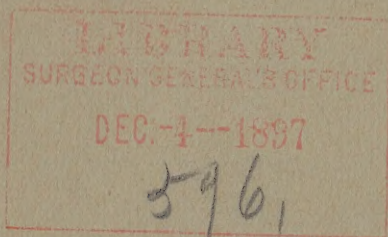
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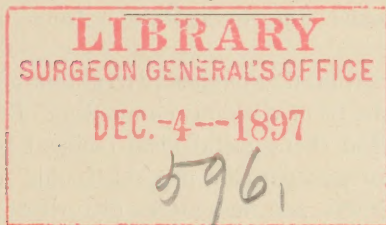
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SOME REMARKS ON
THE PRINCIPLES OF TREATMENT OF
SIMPLE ACUTE LARYNGITIS AND BRONCHITIS.*

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THE purpose of my paper is to encourage authoritative discussion on a certain question, and it can best be served by a text and brief presentation of theories and clinical facts. The literature, both authoritative and current, is full of inconsistencies to the extent of obscuring the therapeutic principles involved.

The pathology of simple acute inflammation of the upper and middle respiratory tract has received much enlightenment in this decade. We accept with modifications some of the theories bequeathed to us. They have the merit of having been tested by generations of practical clinicians, and form the basis of rational therapeutic principles. They may be briefly summarized as follows:

1. A congestive reaction following exposure to cold.

* Read before the American Laryngological Association at its eighteenth annual congress.

2. Hyperæmia due to irritation from dust and vapors.

3. Inflammation due to chemic irritation of the mucous membrane, from vicarious elimination of the products of disturbed tissue metabolism incident to certain systemic disorders, such as a general "cold," acute indigestion, lithæmia, and, in general, disturbances caused by suboxidation.

4. Reflex vasomotor disturbances and localized angioneuroses.

5. To these we now add inflammation caused by pathogenic micro-organisms and their products. These may be inhaled, or they may invade the larynx and bronchi from diseased foci of the throat and nose, or from systemic infection.

The term "expectorant" is full of beneficence. It is an excellent thing on general principles to cast out of the pectoral organ that which offends, and likewise the exfoliated cellular *débris* and spent secretions. "Stimulating expectorant" is a still more felicitous expression. In the days when nauseant and relaxant expectorants were used heroically to unlock the emunctories, and when it was quite the rule to be made more sick in order to get well, stimulating expectorants were a Godsend. The puked, physicked, and phlebotomized patient welcomed a high degree of stimulation.

I will quote an old English medical aphorism as embodying my argument: "Never give stimulating expectorants until the skin is moist and the phlegm loose; it will do no good. You must give ipecac and relaxant expectorants as long as the skin is dry and the phlegm tough."

The gist of my contention is that we are losing sight

of the proper relations of these two classes of expectorants, relaxing and stimulating. We are discarding inelegant nauseants, and using indiscreetly and irrationally the stimulating expectorants fortified by sedatives. This has been brought about in part through lack of confidence in the more agreeable relaxing expectorants in popular use, and through perfection in the application of local palliatives.

A few of the essentially conservative features of acute inflammation of a mucous membrane may be mentioned. Whether the cause is of the nature of a chemical irritant, self-produced, or a pathogenic organism, the ultimate object of determination of blood to the membrane is to flush away by sero-mucous flow the offending matter, and to antagonize the specific pathogenic agents by pouring out a host of resisting leucocytes. From the depths of the glands, and from the folds and interstices, mucus and serum, both aseptic and to a limited degree antagonistic to germ life, are poured out and flush the very substance of the membrane. This is the process called "loosening" the cough. We must keep clearly in mind these essential features of acute catarrhal inflammation, and I would add another very important consideration which applies to the tracheal and bronchial membrane especially. The swelling incident to hyperæmia and congestion of a membrane lining a more or less rigid fibrous and cartilaginous tube means necessarily a condensation of the superficial tissue elements of the membrane. As the calibre of the tube is encroached upon, a given number of epithelial cells must be crowded into a smaller area. This closes the orifices of the muciparous glands and checks mucous flow. Mucus retained in the substance of the membrane may undergo

chemical changes, and become acrid and irritating, even though there be no specific pathogenic ferments present. This may cause even *sapræmia*. Much more injurious to the integrity of delicate epithelial cells are the ptomaines of specific germ origin. The only relief in either instance comes by inducing a free mucous flow.

There is a clinical fact in this connection of great practical importance. An acute inflammation of the respiratory tract is often progressive, much after the manner of *erysipelas* of the skin. Resolution may be well established in the larynx and trachea, and yet the bronchi may be in the acute stage. How very often our patients seem to have a loose cough and yet complain of a feeling of tightness and pressure over the bronchi! It is a good therapeutic maxim to direct the treatment according to the more severe condition. Neglect of this precaution encourages the development of a progressive capillary bronchitis or catarrhal pneumonia. When the larynx is in the primary acute stage, and the bronchi are in the relaxed condition and secreting freely, the prognosis for quick recovery is more favorable. Often we find that the larynx is being constantly reinfected from an unhealthy throat and nose, and once the tide of mucous flow is established from bronchi toward the throat the larynx is relieved, and speedily recovers the normal condition.

The important processes tending toward recovery are, first, a free flow of mucus and serum from the substance of the membrane, and, second, rapid expectoration. Secretions retained in the larynx and bronchi ferment and irritate the membrane. The fact is reaffirmed that we have two distinct classes of therapeutic agents with which to meet the special indications above

mentioned. The skillful use of those first indicated—namely, to encourage free secretion—is the *sine qua non* of successful treatment. The too early use of stimulating expectorants encourages rather the absorption of the inflammatory products than a natural elimination. They are expectorants only after free secretion is established.

Alteratives, astringents, stimulating vapors, and antiseptics have all one predominating effect on an acutely inflamed mucous membrane, which obscures any special therapeutic influence. They are all irritants, and in varying degree antiseptics. We may add that stimulating expectorants are likewise irritating except under certain conditions to be mentioned.

The secondary effect of an irritant on mucous membrane is, as a rule, to produce a sero-mucous flow depleting the tissues. When iodine, alumnol, or nitrate of silver preparations are applied to an acutely inflamed mucous surface, the more delicate epithelial structures are offended, and the membrane weeps in self-defense. Coagulated mucin and incorporated cells, and likewise pathogenic organisms, are flooded away and antagonized. They may be called depletory antiseptics. Tissue congestion is relieved, and the symptoms may be temporarily, very rarely permanently, alleviated. As a rule, the ultimate damage to the membrane is more than the beneficial effect of lessening congestion and removing a part of the offending material, and the reaction which follows is worse than the original condition.

A class of remedies which may appropriately be called vasomotor stimulators, or arterio-capillary contractors, has come into prominence recently, more especially in the treatment of acute laryngitis. Cocaine,

atropine, strychnine, and hydrastine are the more commonly used. In mild cases not associated with bronchitis or pharyngitis they may be depended on, and relieve many symptoms, but in more severe cases their use, local and internal, may retard that natural process of resolution which is the first step toward recovery.

Sedatives and local anæsthetics, such as opiates, cocaine, and menthol, should be used with caution. Opiates dry the mucous membrane and thicken the mucus. The effect of cocaine is pernicious. Menthol gives only very transient relief. The best sedative to an inflamed larynx is a flow of non-irritating bronchial mucus. All treatment should be directed toward this end, and all palliative treatment which retards it should be avoided.

Keeping the principles expressed in the precept of Fothergill clearly in mind, the first thing to determine is the choice of a relaxing expectorant. Ipecac is excellent, but very slow in action in ordinary doses. It usually destroys appetite. Vascular sedatives, such as the tartrate of antimony, lobelia, and aconite, produce so great a degree of vasomotor depression and general relaxation that copious diaphoresis is encouraged, and the patient catches more cold, aggravating the condition for which it was given. They may be administered only when the patient will remain in bed, and the same may be said of pilocarpine.

For about five years I have been using apomorphine, freshly compounded in acidulated mixture, and regard it as the best of all relaxing expectorants. In one-thirtieth-grain doses, at two or three hours' intervals, it rarely fails to cause a free sero-mucous flow in twelve to thirty-six hours. In cases of severe laryngitis and bronchitis rest is an essential adjuvant. Appropriate

general treatment is, of course, implied. Codeine sulphate in one-fifth-grain doses, given independently *pro re nata*, is the best sedative.

Apomorphine in acidulated mixture rarely causes nausea in the doses mentioned, and in fact seems rather to aid digestion and increase the appetite for a limited period. It is slightly laxative. It can be given for many days in doses gradually decreasing as the expectoration becomes more free. Since using this remedy I find less and less use for stimulating expectorants and sedatives. The apomorphine should be administered as long as improvement is decided. A sero-mucous bronchial secretion is coughed out very easily. Only in debilitated subjects, or where there is a broncho-pneumonia, have I found it necessary to supplement this treatment with stimulating expectorants. Of these I regard the carbonate of ammonium as the best, administered in a mucilaginous vehicle or as the fresh aromatic spirits.

A clinical study of this question of relative values and indications for relaxing and stimulating expectorants, and a review of the literature over a considerable period, has prompted me to present this paper. I may add that, in fact, the comparison of results in my own practice, and also in cases under the care of others, strengthens my conviction that the aphorism of Fothergill concerning the use of expectorants is sound, and, further, that in just so far as we have drifted away from it have we deteriorated in our principles of therapeutics of simple acute laryngitis and bronchitis.

